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Investigating the relationship between childhood maltreatment and alcohol misuse in a sample of Danish young adults: Exploring gender differences

SUSAN CRONIN & SIOBHAN MURPHY & ASK ELKLIT

ABSTRACT

BACKGROUND – This study examined the relationship between alcohol misuse and different types of childhood maltreatment in a sample of young adults while controlling for post-traumatic stress disorder (PTSD) symptoms and current mental disorders. This study further examined if these associations were different for males and females. **METHODS** – Data were collected from a Danish national study conducted by The Danish National Centre for Social Research in 2008 and 2009. A sample of 4718 young adults (24 years of age) was randomly selected using the total birth cohort of children born in 1984. Structured interviews were conducted with a response rate of 63%, equating to a total sample size of 2980 participants. **RESULTS** – Three types of child maltreatment were assessed; emotional abuse (N =263), sexual abuse (N=59), and multiple abuse (N=64) alongside a non-abused (N=2595) control group. Findings indicated the three maltreatment groups were all related to alcohol misuse. Maltreated women in particular had a 16-to-25-fold increased risk of alcohol misuse. For males these associations were attenuated with odds ratios (OR) ranging between 3 and 5 for emotional and multiple abuse groups. PTSD symptoms were associated with alcohol misuse for both genders, whilst current mental health disorder was non-significant for both males and females. **CONCLUSION** – A significant relationship was found between the child maltreatment and alcohol misuse. This relationship was significantly stronger for maltreated women, which identifies a gap in the literature. High associations between maltreatment and alcohol misuse in females may suggest alcohol is used as a coping strategy following childhood maltreatment.

KEYWORDS – Childhood maltreatment, overall abuse, sexual abuse, emotional abuse, alcohol abuse, post-traumatic stress disorder, mental disorder, gender

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Alcohol abuse is related to a wide variety of negative outcomes throughout life. According to the Danish Institute of Public Health (Juel, Sørensen, & Brønnum-Hansen, 2006), alcohol is the fourth largest risk factor of deaths in Denmark. Alcohol accounts for around 3000 deaths yearly, corresponding to about 5% of all deaths. Alcohol is third in accounting for lost years of life in Denmark, totalling 70,000 lost life

years for men and women. Measured in Disability-Adjusted Life Years (DALY), alcohol is second only to smoking in costing most years. Among other adverse effects of alcohol abuse are long-term illnesses, decreased number of healthy years of life, loss of quality of life, increased hospital/casualty visits, more contact to the GP, increased sick leave, and premature retirement. Alcohol is the sixth largest burden

on the Danish public healthcare system and the fifth largest cause of lost production costs at more than 7 billion DKK yearly. In general, men are more at risk for all these adversities, and cost society more (Juel et al., 2006).

In addition to these costs to the public and private sectors and one's own quality of life, other risk factors have been found to be related to the family of the alcohol abuser. These include increased risk of more severe abuse of children in the family (Laslett, Dietze, & Room, 2013) and inadvertently forcing children into the role of surrogate parent with increased feelings of abandonment, anxiety, and guilt, which can lead to serious problems for the child later in life (Center for Substance Abuse Treatment, 2004). Alcohol abuse places an excessive burden on society, which requires effective treatment and prevention. In order to accomplish such treatment and prevention, factors associated with groups at high risk of alcohol abuse must be identified. Increased attention has therefore been paid to this area lately in order to determine who is at an elevated risk of developing an alcohol problem.

Childhood maltreatment has been linked to a number of adversities in later life such as post-traumatic stress disorder (Murphy, Shevlin, Armour, & Elklit, 2014; Walsh, Dilillo, Klanecky, & McChargue, 2013), BMI, eating disorders, physical health, anxiety, depression, panic disorders (Kendler et al., 2000; Macmillan et al., 2001), criminality (Elklit, Karstoft, Armour, Feddern, & Christoffersen, 2013), victimisation, and high-risk behaviours (Butchart, Harvey, Mian, & Furniss, 2006). Recent research has also focused on the effect of these experiences on the brain.

These studies suggest that early maltreatment can alter the development of the brain, affecting the cognitive, emotional, social, and physical growth (Butchart et al., 2006). In a large representative British study, it was found that 16% of respondents reported some type of childhood maltreatment (May-Chahal & Cawson, 2005). Other studies present numbers ranging from 10% (Finkelhor, Turner, Ormrod, & Hamby, 2009) to 50% (Euser, Van Ijzendoorn, Prinzie, & Bakermans-Kranenburg, 2010). Individuals with a history of childhood sexual abuse who later take up excessive drinking are also at an increased risk of sexual re-victimisation and unsafe sexual practices that increase the risk for HIV infections (Sartor, Agrawal, McCutcheon, Duncan, & Lynskey, 2007).

Childhood maltreatment has now been linked to alcohol abuse in multiple studies (Dube, Anda, Felitti, Edwards, & Croft, 2002; Fenton et al., 2013; Hughes, Johnson, Wilsnack, & Szalacha, 2007; Keyes, Hatzenbuehler, Grant, & Hasin, 2012; Keyes et al., 2014; Nelson et al., 2002; Sartor et al., 2006). Different theories include biological, psychological, and social factors (Enoch, 2011; Keyes et al., 2012). Anda et al. (2008) found that adverse childhood experiences increased the risk of developing an alcohol abuse disorder by 7.2 times. This association was also found in relation to sexual abuse and alcohol (Nelson et al., 2002). In a similar study, Dube et al. (2002) found childhood abuse to increase the risk of alcohol problems three times. They also found that parental alcoholism increased the risk of alcoholism especially if coinciding with maltreatment. Fenton et al. (2013) found the same relationship even when controlling for age and gender.

Studies also show that parental alcohol abuse leads to more severe child maltreatment, which again leads to a higher risk of alcohol problems for the child later in life, creating a circular relationship (Lasslett et al., 2013). Recent studies suggest that childhood maltreatment increases the risk of drinking in response to recent life stressors, supporting the notion of stress sensitisation (Keyes et al., 2014; Young-Wolff, Kendler, & Prescott, 2012). A study by Walsh et al. (2013) found that PTSD was a mediator between childhood sexual abuse and self-incapacitated alcohol-related rape. In a twin study, males with childhood maltreatment were 1.74 times more likely to develop an alcohol problem than those without. This was found to be primarily due to common environmental factors rather than biological factors (Young-Wolff, Kendler, Ericson, & Prescott, 2011). Only one study did not find a connection between childhood adversities and alcohol abuse (Hardt, Dragan, Schultz, & Schier, 2011). This sample was however not representative, and data was collected via the internet.

There is a paucity of research exploring gender differences, but some studies have found a significant difference in the outcomes of male and female childhood maltreatment. Some of these studies showed that recent life stressors only mediated the relationship between childhood maltreatment and alcohol abuse for women (Young-Wolff et al., 2012). Others found that parental alcohol abuse increased alcohol problems synergistically for males and females with childhood physical abuse; the total effect was larger than the mere added effect of parental alcohol abuse and childhood physical abuse. When looking

at sexual or emotional abuse, this relationship was only significant for females (Fenton et al., 2013).

One problem that presents itself in many of these studies is the classification into different types of childhood maltreatment. Some studies do not differentiate at all between the different types of maltreatment (Keyes et al., 2006; Young-Wolff et al., 2011; Young-Wolff et al., 2012) in relation to which are most strongly related to alcohol abuse. Those that do differentiate often do so by dividing respondents into pre-established groups of physical abuse, emotional abuse, sexual abuse, and neglect, though the exact groupings vary (Fenton et al., 2013; Hardt et al., 2011). Unfortunately, there is a high degree of co-occurrence between the different types of childhood maltreatment, which can confound the results pertaining to which types of maltreatment are related to later risk factors. This is particularly problematic for studies focusing on only one type of abuse (Nelson et al., 2002), as it may be the co-occurrence of another type that should be attributed the effect. This could explain why many studies find different classes of maltreatment to be equally connected to specific outcomes.

The primary aim of our study is to assess the relationship between different types of childhood maltreatment and alcohol misuse. We utilised child maltreatment profiles from a previous study (Armour, Elklit, & Christofferson, 2014) that found four groups of maltreatment based on a national representative sample of young Danish adults. These groups were labelled emotional abuse, sexual abuse, multiple abuse, and non-abused. On the basis of the reviewed literature, our hypothesis is

that there will be a relationship between the different groups of childhood maltreatment and subsequent alcohol abuse. We expect that those who experienced multiple types of abuse will display higher associations with alcohol misuse. Also given that child maltreatment has been associated with a range of psychological problems, PTSD symptoms and presence of current mental disorder will be controlled for in the analyses. A secondary aim will be to investigate the role of gender in these associations.

Method

Procedures

In 2008 and 2009 The Danish National Centre for Social Research conducted a national survey on 4718 Danish 24-year-olds from the 1984 birth cohort. This was done as a stratified random probability survey based on civil personal registration numbers. Participation was voluntary, and of the participants who were approached, 2980 agreed to complete the interview, equalling a response rate of 63%. Of the 37% who did not complete the interview, refusal was the main reason (21%). The structured interviews were conducted by trained interviewers at the respondent's home or via the telephone. Due to the sensitive nature of particular questions, these were filled out on a laptop without the interviewer being aware of the answers. To increase the number of participants who had experienced childhood maltreatment, this group was oversampled by stratifying the number of cases from child protection cases so that these accounted for almost one third of all the cases $N=852$. This disproportionality was later compensated for, so findings were representative

for the Danish population of 24-year-olds. Child protection cases were classified as anywhere the local municipal council had provided support based on concerns for the child. Post-participation psychological help was available to all respondents via a helpline run by the third author. Ethical approval for the study was granted by the Danish Data Protection Agency.

Sample

Of the 2980 participants, 52.2%, ($N=1555$) were male and 47.8% ($N=1425$) female. Participants who were married or living together amounted to 46%, with the remaining 54% living alone. 82.4% had completed or were currently undertaking a vocational or higher education.

Measures

Child maltreatment

Participants were asked 20 questions across four domains of childhood maltreatment: physical abuse (e.g., Have you ever been beaten with an object, such as a whip or coat hanger); psychological abuse (e.g., Have you ever been addressed in a humiliating manner (called lazy, stupid, or useless) by parents/guardians); neglect (e.g., Were you ever occasionally starved due to lack of food or no one available to prepare meals); and sexual abuse (e.g., Did you ever experience forced/completed intercourse). Drawing on a study by Armour et al. (2014), we conducted a latent class analysis and estimated the relative fit of a two-to-six-class model. Based on a series of fit indices and substantive meaning, a four-class model was considered the best fit to the data. This was due to the Bayesian Information criteria (BIC), which has been identified as superior for determin-

ing model fit reaching the lowest for a four-class model. Further, the entropy value which is a measure of the classification accuracy of placing participants into the correct classes was .94. The four latent classes of abuse were labelled no-abuse ($N=2595$, 87.1%), emotional abuse ($N=263$, 8.8%), sexual abuse ($N=59$, 2%), and multiple abuse ($N=64$, 2.1%). This brought the total number of participants who endorsed childhood maltreatment to 12.9% ($N=386$).

Alcohol misuse was assessed by the following question "Have you ever had problems with alcohol (abuse or where you or others thought you had too large a consumption)?" The answers were "yes, but no more", "yes, still", "no, never", and "do not know". Because only 24 respondents answered "yes, still", this item was transformed into a dichotomous variable of "alcohol misuse" ("yes, but no more" and "yes, still") versus "no alcohol abuse" ("no, never"). Five participants answering "do not know" were excluded. This was done due to the low number of respondents admitting to having an alcohol problem at any point, to raise statistical power and allow more thorough analyses. The alcohol misuse group thus consisted of 130 participants. Post-traumatic stress scores and current mental disorders were included as control variables. Alcohol abuse was set as the dependent variable in all analyses.

Post-traumatic stress disorder was measured using the Primary Care PTSD Screen. This instrument consists of four questions concerning intrusive memories, avoidance, arousal, and emotional numbing. The cut-off score of this scale is the endorsement of three or more of the four

questions (Prins et al., 2004). The same cut-off score was used to recode this variable into a dichotomous PTSD yes/no variable.

Measurement of current mental disorder was based on the question: "Do you currently have a mental disorder?" (yes/no).

Statistical analysis

All statistical analyses were conducted using SPSS version 22.0. A χ^2 test was performed to identify any gender differences between those with an alcohol problem and those without. Gender differences were also assessed in relation to child maltreatment by an independent t-test analysis. Bivariate analyses were conducted between the alcohol problem groups and the different types of child maltreatment. A binary logistic regression analysis was also conducted using the same parameters. These analyses were then repeated separately for males and females to explore the potential role of gender. In the regression analyses three dummy codes binary variables were created, in order to investigate the independent effect of each of the maltreatment groups compared to all other types.

Results

A total of 2843 respondents or 95.4% reported no alcohol problems, and a total of 130 or (4.3%) reported alcohol misuse.

A χ^2 test was performed to identify any gender differences between those with an alcohol problem and those without. 96 males (73.8%) and 34 women (26.2%) were identified as at some point having an alcohol problem, and 6.1% of all males were in the alcohol abuse group compared to 2.3% of all females. Yates continuity

Table 1. Prevalence of different abuse typologies and alcohol abuse, according to gender and child maltreatment groups

Label	Total N (%)	No alcohol problem N (%)	Alcohol problem N (%)
Male			
Emotionally abused	135 (8.6)	118 (87.4)	17 (12.6)
Sexually abused	2 (0.1)	1	1
Overall abused	30 (1.9)	19 (63.3)	11 (36.7)
Non-abused	1381 (89.3)	1314 (95.1)	67 (4.9)
Female			
Emotionally abused	128 (9.0)	118 (92.2)	10 (7.8)
Sexually abused	58 (4.0)	48 (82.8)	10 (17.2)
Overall abused	34 (2.4)	28 (82.4)	6 (17.6)
Non-abused	1206 (84.6)	1198 (99.3)	8 (0.07)

Note chi2 for alcohol groups: males $\chi^2 = 68.3(3)$ $p < 0.001$; females $\chi^2 = 120.6(3)$ $p < 0.001$

correlation indicated this as a significant association ($\chi^2=25.374(1)$ $p<0.001$, $\phi=-0.094$). The frequencies for gender differences in abuse typologies are given in Table 1. Gender differences were: Emotional abuse $t(2978)=0.12$, $p>0.05$; Sexual abuse $t(1507)=7.55$, $p<0.01$; Multiple abuse $t(2778)=-0.77$, $p>0.05$.

There were significant differences between alcohol misuse and child maltreatment groups ($\chi^2(3)=135$, $p<.001$). Findings indicated that 26.6% of the multiple abuse group reported alcohol misuse, followed by 16.9% in the sexual abuse, and 10.3% in the emotional abuse groups. Only 2.9% of non-abused individuals reported alcohol misuse.

Results from the binary logistic analysis indicated that the multiple-abused displayed the strongest associations (OR = 13.09, 95%CI 6.9–24.83, $p < .001$), then sexually abused at 7.46 (CI 3.66–15.19) $p < .001$, and emotionally abused at 4.23 (CI 2.53–7.07) $p<0.001$, (Cox & Snell $R^2 = 0.03$, Nagelkerke $R^2 = 0.09$). Controlling for gender showed being male as a protective factor at (OR = 0.24, 95% CI 0.15–0.38) $p<0.001$.

In order to examine gender differences,

analyses were then conducted separately for males and females. In the male analysis there were significant differences between maltreatment groups and alcohol misuse ($\chi^2(3)=68.3$, $p<.001$). Males in the multiple abuse group had higher levels of alcohol misuse with 36.7% in comparison to 12.6% in the emotional abuse group and 4.9% in the non-abused group. For females there were also significant differences ($\chi^2(3)=120.6$, $p<.001$). Females in the multiple abuse and sexual abuse classes reported higher levels of alcohol misuse at 17.6% and 17.2%, respectively. For those in the emotional abuse class, 7.8% reported alcohol misuse while only 0.7% of the non-abused group endorsed alcohol misuse. Taking gender into account, the biggest difference was that non-abused females had a 0.7% risk of belonging in the alcohol abuse group while non-abused males had a 5% risk. Also 76.5% (26/34) of females in the alcohol misuse group belonged to one of the three maltreatment classes. For males this number was 30.2% (29/96) (See Table 1).

The results of the binary logistic regression analyses are reported for males and females in Tables 2 and 3, respectively. For

Table 2. Odds ratios from the male logistic regression analysis predicting alcohol misuse

	OR	95% CI	p
Step 1			
Emotional	3.57	2.15–5.91	<.001
Multiple	6.62	3.67–11.95	<.001
Step 2			
Emotional	3.22	1.92–5.40	<.001
Multiple	5.59	3.03–10.31	<.001
PTSD	2.28	1.30–4.00	<.005
Mental disorder	1.01	0.99–1.03	>.05

Note: Sexual abuse category not included in this part of the analysis

Table 3. Odds ratios from the female logistic regression analysis predicting alcohol misuse

	OR	95% CI	p
Step 1			
Emotional	17.60	6.33–48.95	<.001
Sexual	34.52	12.61–94.52	<.001
Multiple	32.64	3.67–11.95	<.001
Step 2			
Emotional	16.51	5.83–46.82	<.001
Sexual	25.53	8.90–73.21	<.001
Multiple	20.54	5.50–76.74	<.001
PTSD	2.76	1.15–6.62	<.05
Mental disorder	1.09	0.45–2.58	>.05

males the overall model was statistically significant (χ^2 (4) =57.33, $p<.001$). When controlling for PTSD symptoms and current mental disorder, both emotional and multiple abuse groups remained statistically significant (OR = 3.22) and (OR= 5.59), respectively. PTSD symptoms were also significantly associated with alcohol misuse, but current mental disorder was not significant. The female model was also statistically significant (χ^2 (5) =75.47, $p<.001$). When controlling for the effects of PTSD symptoms and current mental disorder, the maltreatment classes remaining significant. The strongest associations were evident for sexual abuse (OR = 25.53), then multiple abuse (OR = 20.54)

and emotional abuse (OR = 16.51). PTSD symptoms were also significantly associated with alcohol misuse, but similarly to the male sample, current mental disorder was not.

Discussion

This study had a primary and a secondary aim. The first was to assess whether there would still appear to be a relationship between childhood maltreatment and alcohol misuse, when childhood maltreatment was examined separately for emotional abuse, sexual abuse, and multiple abuse. We hypothesised that there would still be a considerable association between different childhood maltreatment groups and

alcohol misuse, and that individuals who had experienced multiple types of abuse would display stronger associations. We also contend that the current study contributes to the literature by examining the individual effects of different maltreatment types and how they independently relate to alcohol misuse and addresses a neglected area of research. Another strength of the study was to examine these effects while controlling for outcomes commonly associated with child maltreatment such as PTSD and mental health disorders (Keyes et al., 2012). The secondary aim was to assess any differential gender effects. Interestingly, gender did not significantly determine maltreatment group membership, except for the sexually abused group. However, the difference in the strength of the associations with alcohol misuse was substantial. Collectively the maltreatment groups (12.9%) were within the range reported in previous studies (Euser et al., 2010; Finkelhor et al., 2009; May-Chahal and Cawson, 2005).

We found support for our first hypothesis, that all the different maltreatment typologies were associated with alcohol misuse in comparison to the non-abused group. We also found a significant difference between the three maltreated groups. Especially the multiple-abused group was at high risk of alcohol problems: 26.6% of this maltreatment typology belonged to the alcohol abuse group, compared to only 2.9% of the non-abused group (See Table 1). This amounts to being 13 times more likely to develop an alcohol problem.

When examining differential gender effects, the results indicated that more than one third of males who were in the multiple abuse group developed an alcohol

problem compared to only 5% in the non-abused class. Females were most likely to belong to the alcohol abuse group (17%) if they had been sexually abused or had experienced multiple types of abuse, whereas less than one percent developed an alcohol problem in the absence of any childhood maltreatment. The binary logistic regression (Table 3) showed that women reported higher levels of alcohol misuse following childhood maltreatment than males. While the risk for maltreated males of being in the alcohol abuse group was between almost three (emotional abuse) and five (multiple abuse) times higher, these associations were considerably higher for maltreated women with odds ratios ranging from 16 (emotional abuse) and 25 (sexual abuse). Fenton et al. (2012) failed to find this difference between males and females. These differences may be due to their controlling for other demographic factors simultaneously or to the different classification of alcohol abuse. In general, our results mimic those of earlier studies, with a strong relationship between childhood maltreatment and alcohol abuse.

The first and perhaps most prominent finding is the gender difference. Non-abused males are more likely to misuse alcohol than non-abused females, but this trend is altogether reversed in the maltreated populations. Only 23.5% of women with an alcohol problem belonged to the non-abused class. This number was 69.8% for men. This indicates that three quarters of women who misuse alcohol have a history of childhood maltreatment. This could imply that misusing alcohol is a more common coping mechanism for women to deal with past childhood traumas. This has important implications for

interventions addressing female alcohol misuse and suggests that it may be relevant to assess if there is an underlying trauma history. Only one quarter of males with alcohol problems have a past with childhood maltreatment, which would suggest other reasons for them to abuse alcohol which have not been assessed in this study. To our knowledge these large gender differences within the maltreatment typologies have not earlier been found. The reason for this may be the fact that the maltreatment groups in this study are more clearly defined in comparison to studies that may investigate maltreatment collectively.

In addition, most of the studies taking gender into account have done so primarily while looking at mediating effects like parental alcohol abuse or recent life stressors (Fenton et al., 2013; Young-Wolff et al., 2012). We therefore controlled for the effects of PTSD symptoms and mental disorders as they have been identified as outcomes of maltreatment in previous studies (Kessler et al., 2010; Shenk, Putman, & Noll, 2012). PTSD symptoms were significantly associated to alcohol misuse almost equally for males (2.28 times) and females (2.76 times). Further, when PTSD was included in the analysis, the effects of child maltreatment were attenuated for both males and females and in particular females with more severe forms of maltreatment as seen in the sexual and multiple abuse groups. Notably, however, the relationship between child maltreatment and alcohol misuse was still strong and highly significant. Current mental disorder was not significantly associated with alcohol misuse for either males or females. This finding was surprising and is incon-

sistent with studies which show strong associations between alcohol misuse and mental health problems in young adults (Edwards et al., 2014).

These findings, along with those of other studies, may be implemented in relation to early identification and treatment of those that either have or are likely to develop an alcohol problem. As males do not appear to turn to alcohol in the same degree as females, it may be wise to further investigate men's response to maltreatment in different areas. They may apply a different, although not necessarily better, coping strategy than alcohol abuse.

Limitations

The current findings should be interpreted in the light of some limitations and methodological issues. The first was the use of a single-item question to measure alcohol misuse. It should also be noted that this measure combined past and current alcohol misuse. Therefore, future studies should investigate these associations using a standardised measure of alcohol misuse. Further, there may be other mechanisms that increase the risk of developing an alcohol problem that were not assessed in the current study. It can be argued, however, that the results, especially for women, were strong enough to assume there is at least some relationship between childhood maltreatment and alcohol abuse that is not due to other factors.

Additionally, the relative small alcohol misuse group (130 = 4.3%) limits the findings of our study. According to a survey (Statistics Denmark, 2013), 10.8% of Danish 16–24-year-olds exhibit signs of problematic alcohol use. Unfortunately, only 12.7% in this age group expressed a desire

to reduce their alcohol intake. This could indicate that there may be a large group of false negatives in our study who do not report alcohol misuse as they do not perceive their alcohol consumption to be an issue. It may be that realisation of an alcohol problem comes later in life. Another issue may be that some alcohol problems have not manifested themselves so early in life and first appear later than the 24th life year.

Furthermore, this study was based on self-report data and no objective measures were included. In relation to childhood maltreatment, the total amount of participants belonging to an abused class was 12.9% (N= 386). Split into gender and three separate abuse classes, this also made for small groupings and limited the statistical power in the analyses. An alternative approach to counter this could have been to analyse the abused classes as one, or avoid splitting into gender. This was not done, as there appeared to be a significant difference between these different variables that would not have been apparent if the variables had been collapsed into one. Equivalent analyses to these must be conducted with a larger randomised sample to assess the accuracy of these findings. Finally, males who experienced sexual abuse were excluded from the main analysis due to small sample size (N=2). Future research with larger male samples would be beneficial to investigate the childhood sexual abuse and alcohol misuse in male samples.

Conclusion

Some very interesting findings have emerged from this study. Most importantly, while there was no difference between the classes of maltreatment in relation to gender, except for sexual abuse, there was a large difference in relation to those who developed an alcohol problem. Women were overall much more likely to have a problematic relationship with alcohol if they had been abused, with 77% of the alcohol misuse group having been maltreated. This is important knowledge in terms of interventions for females with alcohol problems. It indicates that questions regarding possible underlying issues, such as childhood trauma, should be addressed in order to ascertain whether alcohol is being used as a coping mechanism following maltreatment. PTSD was significantly associated with alcohol misuse for both males and females, while current mental disorders was non-significant. Together these findings point to the importance of discerning between male and female maltreated subjects with regard to alcohol abuse.

Declaration of interest None.

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